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ABSTRACT

This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for two programs in the state's postsecondary-level computer information systems technology cluster: computer programming and network support. Presented in the introduction are program descriptions and suggested course sequences for each program and a course framework. Section I consists of course outlines for the following: 20 computer information systems technology courses (computer concepts; survey of microcomputer applications; operating platforms; system administration and control; network management; systems analysis and design; the programming languages BASIC, RPG, and COBOL; database programming; control language programming; advanced RPG; advanced COBOL; C programming language; fundamentals of data communications; advanced network management; client/server systems; system maintenance; work-based learning in computer information systems technology; and fundamentals of microcomputer applications); related vocational-technical courses (business accounting; operating systems, computerized accounting, business communication, and advanced microcomputer applications); and related academic courses (principles of accounting I-II and English composition I). Each course outline contains some/all of the following: course name, abbreviation, classification, and description; prerequisites; and competencies/suggested objectives. Recommended tools and equipment are listed in section II. Appended are lists of related academic topics and workplace skills for the

21st century and student competency profiles for the computer programming and network support programs. (MN)

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Mississippi Curriculum Framework for Computer Information Systems Technology Cluster

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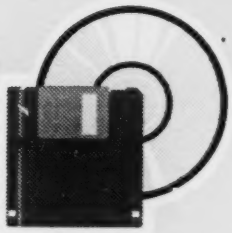

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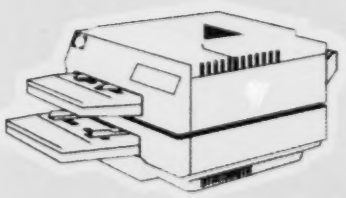

Postsecondary Vocational and Technical Education 1996

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MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

COMPUTER INFORMATION SYSTEMS TECHNOLOGY
(Program CIP: 52.1201 - Management Information Systems & Business Data)

COMPUTER PROGRAMMING
(Program CIP: 52.1201)

NETWORK SUPPORT
(Program CIP: 52.1290 – Computer Network Support Technology)

POSTSECONDARY PROGRAMS 1996

July 30, 1996

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FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.

- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.

- Classification - Courses may be classified as:
  - Vocational-technical core - A required vocational-technical course for all students.
  - Vocational-technical elective - An elective vocational-technical course.
  - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
  - Academic core - An academic course which is required as part of the requirements for an Associate degree.

- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.

- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours — Math/Science Elective
  - 3 semester credit hours — Written Communications Elective
  - 3 semester credit hours — Oral Communications Elective
  - 3 semester credit hours — Humanities/Fine Arts Elective
  - 3 semester credit hours — Social/Behavioral Science Elective

  It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
  - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
  - students who cannot demonstrate mastery of this content will be given the opportunity to do so.

- The roles of the Baseline Competencies are to:
  - Assist community/junior college personnel in developing articulation agreements with high schools, and
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts

- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

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PROGRAM DESCRIPTION

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

The Computer Information Systems Technology curricula are designed as two-year programs of study to prepare the student for entry level employment in Computer Programming or Network Support.

COMPUTER PROGRAMMING

The Computer Programming option offers training in application development on microcomputers and mid-range computers. Emphasis is placed on mid-range computers. An Associate of Applied Science degree is earned upon successful completion of the Computer Programming curriculum. Successful completion of the first year entitles a student to receive a certificate of completion in Computer Operations.

NETWORK SUPPORT

The Network Support option is a two-year program which offers training in telecommunications, network administration, and client/server systems. An Associate of Applied Science degree is earned upon successful completion of the Network Support curriculum. Successful completion of the first year entitles a student to a certificate of completion in Network Operations.

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COMPUTER INFORMATION SYSTEMS TECHNOLOGY

COMPUTER PROGRAMMING OPTION
SUGGESTED COURSE SEQUENCE*

FIRST YEAR

4 sch	Programming Language Elective†	3 sch	Social/Behavioral Science Elective
4 sch	Computer Concepts (CPT 1124)	2 sch	Operating Platforms (CPT 1332) OR
3 sch	Principles of Accounting I (ACC 1213) OR	2 sch	Operating Systems (BOT 2142)
3 sch	Business Accounting (BOT 1433)	3 sch	System Administration and Control (CPT 1343)
3 sch	Written Communications Elective	3 sch	Principles of Accounting II (ACC 1223) OR
4 sch	Survey of Microcomputer Applications (CPT 1324)	3 sch	Computerized Accounting (BOT 2413)
		4 sch	Programming Language Elective†
18 sch		15 sch	

SECOND YEAR

3 sch	Network Management (CPT/BOT 2153)	3 sch	Business Communication (BOT 2813)
4 sch	Programming Language Elective†	4 sch	Systems Analysis and Design (CPT 2354)
3 sch	Oral Communications Elective	4 sch	Programming Language Elective†
3 sch	Math/Science Elective	3 sch	Humanities/Fine Arts Elective
4 sch	Programming Language Elective†	3 sch	Elective††
17 sch		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

† Twenty sch of programming electives from the following list are required in the Computer Information Systems Technology curriculum:

4 sch BASIC Programming Language (CPT 1214)
4 sch RPG Programming Language (CPT 1224)
4 sch COBOL Programming Language (CPT 1234)
4 sch Database Programming (CPT 2244)
4 sch Control Language Programming (CPT 2254)
4 sch Advanced RPG Programming Language (CPT 2264)
4 sch Advanced COBOL Programming Language (CPT 2274)
4 sch C Programming Language (CPT 2284)

†† Programming Language Elective, Work-Based Learning in Computer Information Systems Technology [CPT 291(1-6)], or other approved related technical or academic course.

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COMPUTER INFORMATION SYSTEMS TECHNOLOGY

NETWORK SUPPORT OPTION
SUGGESTED COURSE SEQUENCE*

FIRST YEAR

4 sch	Survey of Microcomputer Applications (CPT 1324)	2 sch	Operating Platforms (CPT 1332)
4 sch	Computer Concepts (CPT 1124)	4 sch	C Programming Language (CPT 2284)
3 sch	Fundamentals of Data Communications (CPT 1413)	3 sch	Network Management (CPT/BOT 2153)
4 sch	BASIC Programming Language (CPT 1214)	3 sch	System Administration and Control (CPT 1343)
3 sch	English Composition I (ENG 1113)	3 sch	Social/Behavioral Science Elective
18 sch		15 sch	

SECOND YEAR

3 sch	Principles of Accounting I (ACC 1213) OR	3 sch	Oral Communications * Elective
3 sch	Business Accounting (BOT 1433)	3 sch	Business Communication (BOT 2813)
3 sch	Math/Science Elective	4 sch	Client/Server Systems (CPT 2444)
3 sch	Advanced Network Management (CPT 2423)	3 sch	Advanced Microcomputer Applications (BOT 2713)
3 sch	System Maintenance (CPT 2433)	3 sch	Elective†
3 sch	Humanities/Fine Arts Elective	16 sch	
15 sch			

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

† May be any course in Computer Information Systems Technology (CPT) or Business and Office Technology (BOT).

FRAMEWORK OF COURSES

	Computer Programming	Network Support
Vocational-Technical Core		
Computer Concepts	x	x
Survey of Microcomputer Applications	x	x
Operating Platforms	x	x
System Administration and Control	x	x
Network Management	x	x
Work-Based Learning in Computer Information Systems Technology	x	x
AOC Core		
Systems Analysis and Design	x	
BASIC Programming Language		x
C Programming Language		x
Fundamentals of Data Communications		x
Advanced Network Management		x
Client/Server Systems		x
System Maintenance		x
Vocational-Technical Electives		
BASIC Programming Language	x	
RPG Programming Language	x	
COBOL Programming Language	x	
Database Programming	x	
Control Language Programming	x	
Advanced RPG Programming Language	x	
Advanced COBOL Programming Language	x	
C Programming Language	x	
Related Vocational-Technical Courses		
Business Accounting	x	x
Operating Systems	x	
Computerized Accounting	x	
Business Communication	x	x
Advanced Microcomputer Applications		x
Related Academic Courses		
English Composition I		x
Principles of Accounting I	x	x
Principles of Accounting II	x	
Written Communications Elective	x	
Social/Behavioral Science Elective	x	x
Oral Communications Elective	x	x
Math/Science Elective	x	x
Humanities/Fine Arts Elective	x	x

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SECTION I:

CURRICULUM GUIDE

FOR

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

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COMPUTER INFORMATION SYSTEMS TECHNOLOGY COURSES

Course Name: Computer Concepts

Course Abbreviation: CPT 1124

Classification: Vocational-Technical Core

Description: This course is an introduction to the history, terminology, and theory of computer systems. Students will gain hands on experience in the operation of a mid-range computer. (4 sch: 3 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Overview history of information systems.
   a. Summarize significant advances in the development of computer hardware and software.
   b. Identify major individuals and their contributions.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Discuss hardware components.
   a. Describe the input, process, output, and storage elements of the information processing cycle and explain each element.
   b. Describe and discuss the three main classifications of computers to include micro, mid-range, and mainframes.
   c. Demonstrate knowledge of number systems and internal data representation.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, S8
   Workplace Skills (See Appendix B): WP2, WP6
3. Explain classes of software.
   a. Describe functions of systems software.
   b. Identify widely used applications software.
   c. Discuss various high-level languages.
   d. Discuss data organization.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M1, M6, S8
   Workplace Skills (See Appendix B): WP2, WP6
4. Describe functions of data communications.
   a. Describe network topology.
   b. Discuss local area networks.
   c. Discuss wide area networks.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6

5. Identify career opportunities.
   a. Discuss entry-level positions.
   b. Discuss programmer/analyst positions.
   c. Discuss administration/management positions.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6
6. Discuss stages of program development.
   a. Explain the use of program design tools.
   b. Discuss structured/modular programming.
   c. Identify the steps in the system development life cycle.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M1, M2, M3, M4, M5, M6, M7, S1, S2, S3, S4, S5, S6, S7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
7. Develop a working knowledge of a mid-range computer's operating environment.
   a. Explain operating system concepts.
   b. Describe hardware components including vendor, model, and capacities.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
8. Demonstrate the ability to run jobs.
   a. Run a batch job.
   b. Run an interactive job.
   Related Academic Topics (See Appendix A): C2, C3, C5, M1,
   Workplace Skills (See Appendix B): WP2, WP4, WP6
9. Create source members.
   a. Use text editor to create and modify source programs and/or text.
   Related Academic Topics (See Appendix A): C2, C3, C4, M1, S8
   Workplace Skills (See Appendix B): WP2, WP6
10. Demonstrate printer management.
   a. Change forms.
   b. Change ribbons.
   c. Align paper.
   d. Resolve paper jams.
   Related Academic Topics (See Appendix A): C1, C2, M1
   Workplace Skills (See Appendix B): WP4, WP5, WP6
11. Utilize the mid-range computer to perform file maintenance.
   a. Create files.
   b. Maintain files.
   Related Academic Topics (See Appendix A): C1, C2, C4, M1
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

12. Comprehend the system message function.
    a. Respond to operator messages.
    b. Send and receive messages.

    Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1
    Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Survey of Microcomputer Applications

Course Abbreviation: CPT 1324

Classification: Vocational-Technical Core

Description: This course will introduce word processing, spreadsheet, and database management software with integration of these applications. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate a basic understanding of an operating system.
   a. Apply basic commands of operating system software.
   b. Demonstrate proper file and disk management.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Demonstrate the use of word processing software.
   a. Produce documents using word processing features.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate the use of spreadsheet applications.
   a. Create spreadsheets utilizing application concepts.
   b. Produce graphic representations of spreadsheet data.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Demonstrate the use of database applications.
   a. Apply database features to create and maintain files.
   b. Generate reports.
   c. Query the database.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Transfer data among applications.
   a. Import/export spreadsheet data and/or charts.
   b. Import/export database fields.
   c. Import/export word processing text.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Operating Platforms

Course Abbreviations: CPT 1332

Classification: Vocational-Technical Core

Description: This course will provide experience in a variety of operating platforms. Emphasis will be placed on support personnel interaction with the platform to assist users in business environments. (2 sch: 1 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe global terminology of platforms.
   a. Define operating platform terminology.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Use operating platform to perform basic system tasks.
   a. Describe unique features of a particular platform.
   b. Demonstrate fundamental operations using the platform.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Discuss software in relation to different platforms.
   a. Describe the difference between propietary and portable operating platforms.
   b. Explore application software under various operating platforms.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Explain the function of utilities.
   a. Show what each utility within the platform does.
   b. Discuss utilities which may be purchased.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Use advanced features of platform.
   a. Customize system configuration.
   b. Establish system security.
   c. Explore other features.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Differentiate between micro and mid-range operating platforms.
   a. Explain operating platform differences.
   b. Compare similarities.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
7. Discuss computer viruses.
   a Identify types and effects of viruses.
   b. Research prevention and elimination software.
   c. Install and test virus protection software.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: System Administration and Control

Course Abbreviation: CPT 1343

Classification: Vocational-Technical Core

Description: A study of the system administration of a mid-range computer including control language, utilities, and control commands. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: Computer Concepts (CPT 1124)

Competencies and Suggested Objectives:

1. Apply methods of describing database files.
   a. Create and enter records into physical files.
   b. Create and use logical files.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Demonstrate the ability to query a mid-range system's database.
   a. Create a query to extract information from a file.
   b. Create a query to extract information from multiple files.
   c. Create reports and/or files from queries.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate the use of the system's utility to create menus and display screens.
   a. Create a menu that allows different actions to be taken on a database file.
   b. Create and test a display screen for use with a high-level language program.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Develop control language programs to access system functions and database files.
   a. Explain the role of control language in relation to other languages.
   b. Demonstrate the ability to create, compile, and test control language programs.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

5. Transfer files between mid-range and microcomputer systems.
   a. Upload file to mid-range computer.
   b. Download file to microcomputer.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Demonstrate the ability to backup and recover information.
   a. Discuss types of back-up media.
   b. Develop strategies and perform back-up procedures.
   c. Discuss recovery procedures.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Network Management

Course Abbreviation: CPT 2153 (BOT 2153)

Classification: Vocational-Technical Core

Description: This course focuses on the management of a computer network lab including installation of network software and administration of a network. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: Microcomputer Applications (BOT 1133) or Survey of Microcomputer Applications (CPT 1324)

Competencies and Suggested Objectives:

1. Identify networking theories and concepts and the different components and technologies that allow network communication.
   a. Identify characteristics and features of system hardware components.
   b. Identify the roles of workstation operator, network administrator, and system operator.
   c. Identify the technologies involved in network communication.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, S6
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Plan, install, and configure a network.
   a. Design network cabling and server layout.
   b. Install and configure server hardware.
   c. Configure network software to meet specifications.
   d. Select application software appropriate to the network.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, S6
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Perform network administration.
   a. Organize directories, files, and disks.
   b. Implement user configuration to include network security.
   c. Implement network backup strategies.
   d. Establish network printing services.
   e. Perform maintenance check.
   f. Monitor system performance and troubleshoot.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, S6
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Systems Analysis and Design

Course Abbreviation: CPT 2354

Classification: AOC Core (Computer Programming)

Description: This course introduces techniques used in systems analysis and design. Emphasis will be placed on the design, development, and implementation of an information system. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Advanced RPG Programming (CPT 2264) or Advanced COBOL Programming (CPT 2274)

Competencies and Suggested Objectives:

1. Describe the role of systems analysts.
   a. Discuss the functions of systems analysts.
   b. Identify skills required for systems analysts.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Describe the steps involved in a system project.
   a. Identify the phases in a system project.
   b. Identify basic fact-gathering techniques.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Discuss initiation of a system project and preliminary investigation.
   a. List the objectives of preliminary investigation.
   b. Conduct a preliminary investigation.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Discuss the detail system investigation and analysis.
   a. Describe detail system investigation techniques.
   b. Record facts gathered in detail system investigation.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

5. Discuss system design.
   a. Describe the steps in system design.
   b. Design system output, system input, files, and processing.
   c. Present system design to management.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Discuss system development.
   a. Identify the tasks involved in system development.
   b. Develop programming specifications.
   c. Program, test, and document the system.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
7. Describe system implementation and evaluation.
   a. Convert existing files.
   b. Determine the conversion method.
   c. Implement the system.
   d. Conduct post-implementation evaluation.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: BASIC Programming Language

Course Abbreviation: CPT 1214

Classification: Vocational-Technical Elective (Computer Programming); Vocational-Technical Core (Network Support)

Description: Introduction to the BASIC programming language to include sort, controlled loops, multi-dimensional arrays, and modular programming. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate the use of computational and logical operations.
   a. Develop programs that use arithmetic operations.
   b. Produce programs that use relational operators and compound conditions.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6.
2. Illustrate the use of control breaks.
   a. Write programs using one-level and two-level control breaks.
   b. Produce programs using subtotals and final totals.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Illustrate techniques available to improve the appearance of printed reports.
   a. Develop a printer spacing chart.
   b. Produce programs that use floating dollar signs and commas.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Illustrate the use of interactive programs.
   a. Write programs which require user input.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Demonstrate the use of controlled loops.
   a. Develop programs which require statements to be executed multiple times by making use of structured programming.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Illustrate the use of arrays/tables.
   a. Write programs which require defining, loading, and searching an array/table.
   b. Develop programs which use arrays to store and print totals.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
7. Apply the use of sort routines.
   a. Produce programs using various sort routines.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
8. Demonstrate file processing and file maintenance techniques.
   a. Write programs to create, update, and delete records.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
9. Develop programs that use menus.
   a. Write programs which allow the user to make an appropriate menu choice to carry out an action.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: RPG Programming Language

Course Abbreviation: CPT 1224

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course is designed to introduce the student to the RPG language and to use the computer in business applications. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Computer Concepts (CPT 1124) or by permission of instructor

Competencies and Suggested Objectives:

1. Discuss the development of the RPG language.
   a. Identify the purpose of RPG.
   b. Discuss the history of RPG.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Analyze the steps of the program development cycle.
   a. Describe the steps involved in the creation of RPG programs.
   b. Use design forms to produce input layouts and output layouts.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Use RPG specifications for a simple program.
   a. Utilize the RPG language to design and implement the reading of data and to print a report with headings and edit codes.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Apply the RPG syntax to perform arithmetic and assignment operations.
   a. Utilize the RPG language to design and implement calculation specifications producing a report with accumulated totals.
   b. Demonstrate knowledge and use of numeric literals and fields.
   c. Demonstrate knowledge and use of character literals and fields.
   d. Demonstrate knowledge and use of figurative constants.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Produce RPG programs using a top-down, structured approach.
   a. Identify and illustrate the use of sequence, selection, and iteration.
   b. Identify and illustrate the use of modular coding techniques.
   c. Identify the coding necessary to perform control break logic.

d. Use control break logic to produce a report with subtotals and final totals.
e. Use selection logic to produce exception output reporting.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Discuss the use of RPG operations for file access and record manipulation.
   a. Use RPG file operations for sequential access of records to produce a report.
   b. Use RPG file operations for random access of records to produce a report.
   c. Use RPG file operations for writing records to a data file.
   d. Use RPG file operation for updating and deleting data file records.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

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Course Name: COBOL Programming Language

Course Abbreviation: CPT 1234

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course is designed to introduce the student to the use of the COBOL language in business applications to include arithmetic operations, report editing, control break processing and table processing techniques. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Computer Concepts (CPT 1124)

Competencies and Suggested Objectives:

1. Describe the COBOL language.
   a. Discuss the divisions of a COBOL program.
   b. Apply the steps involved in designing, coding, executing, and debugging COBOL programs.
   c. Incorporate structured programming techniques in all programs.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Demonstrate the use of arithmetic operations.
   a. Develop a program which includes addition, subtraction, multiplication, and division; and compute.
   b. Develop a program which includes computation of totals.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Prepare edited reports.
   a. Develop a program which includes signs, zero suppression, and insertion characters.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Demonstrate a knowledge of decision processing.
   a. Develop a program which includes logical comparison.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

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5. Produce reports to initiate control break processing.
   a. Develop a program which includes single-level control breaks.
   b. Develop a program which includes multi-level control breaks.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Practice table processing.
   a. Develop a program which includes the processing and searching of a single dimension table/array.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Database Programming

Course Abbreviation: CPT 2244

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course will introduce programming using a database management software application. Emphasis will be placed on menus and file maintenance. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: BASIC Programming (CPT 1214)

Competencies and Suggested Objectives:

1. Demonstrate the use of computational and logical operators.
   a. Create programs using the basic arithmetic operators.
   b. Develop programs using the various relational operators and compound conditions.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Illustrate the process of preparing reports.
   a. Write programs that produce formatted reports.
   b. Create programs that produce single and multiple level control break reports with subtotals and final totals.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Develop programs that use menus.
   a. Create programs which allow the user to make a menu choice to carry out an appropriate action.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Demonstrate the use of controlled loops.
   a. Write programs which require statements to be executed multiple times by using structured programming.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Apply file processing and file maintenance techniques.
   a. Develop programs which access multiple files.
   b. Write programs which allow a user to add, update, and delete records.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Control Language Programming

Course Abbreviation: CPT 2254

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course develops the ability to code, debug, and execute control language (CL) programs utilizing the basic features of the language. Topics include the role of control language in relation to other languages, input and output in CL, and testing and debugging CL programs. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: System Administration and Control (CPT 1343)

Competencies and Suggested Objectives:

1. Explain the role of control language in relation to other languages.
   a. Describe the strengths and weaknesses of CL.
   b. Discuss the use of CL to control work-flow and define job streams.
   c. Contrast the use of CL and other high level languages.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Describe how CL command names are structured.
   a. Discuss the use of parameters and their flexibility.
   b. Define default values, predefined values, special values, and list values.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate the ability to create, compile, and test CL programs.
   a. Create a CL program in a source physical file.
   b. Compile a CL program using the CL compiler.
   c. Test and correct errors in CL programs.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S1, S2, S3, S4, S5, S6, S7,S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Discuss the use of program variables.
   a. Declare program variables.
   b. Manipulate program variables.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1,M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Identify CL control structures.
   a. Define structured programming.
   b. Use branching in a CL program.

c. Use the IF/THEN/ELSE control structure.
d. Use nested IF structures and DO groups.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Discuss the use of input and output in a CL program.
   a. Explain how program parameters are passed.
   b. Use files and data areas in a CL program.
   c. Monitor and handle basic error conditions that may occur in CL.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Advanced RPG Programming Language

Course Abbreviation: CPT 2264

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course is a continuation of the RPG programming language. Emphasis is placed on advanced table processing, file maintenance, and interactive programming. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: RPG Programming Language (CPT 1224)

Competencies and Suggested Objectives:

1. Apply RPG programming theory and techniques to tables and arrays.
   a. Discuss table and array definition techniques.
   b. Discuss methods of loading data into tables and arrays.
   c. Discuss techniques to search tables and arrays.
   d. Produce an RPG program using table and array techniques.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Discuss the use of RPG techniques to develop interactive applications.
   a. Design and develop display screen formats to be utilized in RPG interactive application programs.
   b. Utilize RPG programming theory and techniques to develop interactive RPG programs to maintain database files.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Produce business applications of the RPG language using the program development cycle.
   a. Design (using design tools), code (using specification sheets), enter and compile (using mid-range computer), test and correct (using appropriate test data), and document (using comments) an RPG case study.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Advanced COBOL Programming Language

Course Abbreviation: CPT 2274

Classification: Vocational-Technical Elective (Computer Programming)

Description: This course is a continuation in the study of COBOL. Emphasis is placed on advanced table processing, file maintenance, and interactive programming. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisite: COBOL Programming Language (CPT 1234)

Competencies and Suggested Objectives:

1. Demonstrate the use of multiple level tables/arrays.
   a. Employ sequential searches.
   b. Employ binary searches.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Use a sort routine.
   a. Develop a program that incorporates a sort routine.
   b. Discuss the merge command.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Illustrate file maintenance techniques.
   a. Develop a program that adds, changes, and deletes records.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, C6, M1
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Utilize interactive programming techniques.
   a. Develop a program which uses screens for input and output and requires user interaction.
   b. Discuss subfile processing.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: C Programming Language

Course Abbreviation: CPT 2284

Classification: AOC Core (Network Support); Vocational-Technical Elective (Computer Programming)

Description: This course is designed to introduce the student to the C programming language and its basic functions. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Successful completion of any CPT programming language course.

Competencies and Suggested Objectives:

1. Demonstrate proper programming techniques.
   a. Utilize structured design and coding techniques in all programs.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Show ability to use fundamental C concepts.
   a. Develop programs that use:
      (1) Input/output.
      (2) Arithmetic operations.
      (3) Operator precedence.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate the use of decision-making.
   a. Develop a program which uses conditional/relational operations.
   b. Develop a program which uses a switch statement.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Employ repetitive structures.
   a. Create programs using various loops.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Discuss array processing.
   a. Create a program that uses a single-dimension array.
   b. Create a program that uses a multi-dimension array.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Relate a knowledge of preprocessor commands.
   a. Develop a program which uses preprocessor commands.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
7. Demonstrate the use of functions.
   a. Prepare programs that pass parameters to functions by reference and by value.
   b. Utilize recursive function calls in a program.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
8. Discuss pointer variables.
   a. Develop a program which uses pointers.
   b. Use linked lists in a program.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6
9. Examine C's string handling capabilities.
   a. Create a program which manipulates strings.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8

   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Fundamentals of Data Communications

Course Abbreviation: CPT 1413

Classification: AOC Core (Network Support)

Description: This course presents basic concepts of telephony, local area networks, wide area networks, data transmission, and topology methods. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss basic communications.
   a. Analyze various communications procedures.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Analyze hardware, media, and software.
   a. Discuss uses of modems.
   b. Describe various communications media.
   c. Describe data transmission codes and protocols.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Discuss communications networks.
   a. Discuss network basics.
   b. Analyze local area networks.
   c. Analyze wide area networks.
   d. Discuss planning, design, and implementation of networks.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Discuss the future of communication.
   a. Analyze current trends and issues.
   b. Utilize teleconferencing/video conferencing techniques.
   Related Academic Topics (See Appendix A): C1, C3, C4, C5, C6, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Demonstrate the use of the Internet.
   a. Explain what the Internet is.
   b. Use electronic mail on the Internet.

c. Use gopher and the world wide web.
d. Utilize browsers to scan the Internet.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Advanced Network Management

Course Abbreviations: CPT 2423

Classification: AOC Core (Network Support)

Description: This course is a continuation of Network Management with emphasis placed on menus, login scripts, and sharing devices. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: Network Management (BOT/CPT 2153)

Competencies and Suggested Objectives:

1. Demonstrate various advanced printer techniques.
   a. Show how to redirect output to various printers.
   b. Demonstrate defining print devices and job configurations.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Use server console commands in order to control system.
   a. Demonstrate the commands to display information about the server.
   b. Use commands to limit who has access to the server.
   c. Show the steps to power down the server.
   d. Demonstrate commands to control the disks.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate how to share CD-ROMS.
   a. Show the command to mount the CD-ROM.
   b. Use the command to dismount the CD-ROM.
   c. Demonstrate automating the mounting of the CD-ROM.
   d. Show how to change and list CD-ROM volumes.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Demonstrate the use of login scripts.
   a. Discuss the purpose of login scripts.
   b. Create login scripts.
   c. Use login script commands.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Use menu systems to increase the efficiency of users.
   a. Design a menu.
   b. Create menu script files.
   c. Demonstrate compiling and running scripts.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Client/Server Systems

Course Abbreviation: CPT 2444

Classification: AOC Core (Network Support)

Description: This course introduces client/server systems to include components, connectivity, development, and user training. (4 sch: 2 hr lecture, 4 hr. lab)

Prerequisite: Advanced Network Management (CPT 2423) and System Maintenance (CPT 2433)

Competencies and Suggested Objectives:

1. Discuss the advantage of client/server systems.
   a. Define client/server systems.
   b. Contrast client/server computing with other computing environments.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Discuss the components of client/server systems.
   a. Identify the function of the client.
   b. Demonstrate a knowledge of graphical user interface (GUI).
   c. Demonstrate a knowledge of the role of the server.
   d. Describe the cooperative processing between client and server.
   e. Demonstrate a knowledge of connectivity in client/server systems.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate a knowledge of client/server development.
   a. Describe client/server software.
   b. Analyze client/server hardware.
   c. Discuss service and support of client/server systems.
   d. Develop user training.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Develop a client/server applications system.
   a. Conduct a preliminary investigation.
   b. Design a client/server system.
   c. Develop system specifications.
   d. Use visual language to develop a system.
   e. Discuss implementation of the system.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: System Maintenance

Course Abbreviation: CPT 2433

Classification: AOC Core (Network Support)

Description: This course covers the diagnosis, troubleshooting, and maintenance of computer components. Topics include hardware compatibility, system architecture, memory, input devices, video displays, disk drives, modems, and printers. (3 sch: 2 hr. lecture, 2 hr. lab.)

Prerequisites: Operating Platforms (CPT 1333)

Competencies and Suggested Objectives:

1. Discuss basic elements of computer maintenance.
   a. Identify types of tools.
   b. Demonstrate knowledge of compatibility chips, buses, and other features.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Perform system disassembly/inspection.
   a. Demonstrate the ability to tear down system.
   b. Demonstrate the ability to identify each component.
   c. Demonstrate the ability to reassemble.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
3. Discuss preventive maintenance.
   a Develop knowledge of steps for preventive maintenance.
   b. Establish a preventive maintenance plan.
   c. Perform preventive maintenance on components.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Illustrate ability to troubleshoot.
   a. Perform basic troubleshooting steps.
   b. Run diagnostic software.
   c. Troubleshoot various devices.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
5. Upgrade computer components.
   a. Install boards.
   b. Install drives.
   c. Install peripherals.
   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Describe mid-range maintenance and troubleshooting.
   a. Operate diagnostic software.
   b. Perform vendor troubleshooting steps.
   c. Install components for replacement and upgrade.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Work-Based Learning in Computer Information Systems Technology

Course Abbreviation: CPT 291(1-6)

Classification: Vocational-Technical Elective (Computer Programming; Network Support)

Description: Direct application of concepts, terminology, and theory of computer information systems technology. Students must be employed in a work environment where they will have to solve problems as encountered in industry. (Credit is awarded at the rate of 1 sch per 3 hr. externship.) (1-6 sch: 3-18 hr. externship)

Prerequisites: None

Competencies and Suggested Objectives:

1. Apply technical skills needed to be a viable member of the work force.
   a. Prepare a description of technical skills to be developed in the work-based learning program.
   b. Develop technical skills needed to be a viable member of the work force.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP1
2. Apply skills developed in other program area courses.
   a. Perform skills developed in other program area courses in the work-based learning program.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP5, WP6
3. Apply human relationship skills.
   a. Use pro-active human relationship skills in the work-based learning program.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP3
4. Apply and practice positive work habits and responsibilities.
   a. Perform assignments to develop positive work habits and responsibilities.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP3
5. Work with instructor and employer to develop written occupational objectives to be accomplished.
   a. Perform written occupational objectives in the work-based learning program.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP6

6. Assess accomplishment of objectives.
   a. Prepare daily written assessment of accomplishment of objectives.
   b. Present weekly written reports to instructor in activities performed and objectives accomplished.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP6
7. Utilize a set of written guidelines for the work-based learning program.
   a. Develop and follow a set of written guidelines for the work-based learning program.

   Related Academic Topics (See Appendix A): C5, C6
   Workplace Skills (See Appendix B): WP6

Course Name: Fundamentals of Microcomputer Applications

Course Abbreviation: CPT 1113

Classification: Service course; not to be taken by Business and Office and Related Technology students.

Description: This course will introduce information processing concepts to include: word processing, spreadsheet, and database management software. **Service course; not to be taken by Business and Office and Related Technology students.** (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss hardware components.
   a. Describe the input, output, and storage elements of the information processing cycle and explain each element.
   b. Describe and discuss the three main classifications of the computer to include micro, mid-range, and mainframes.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Explain classes of software.
   a. Describe functions of systems software.
   b. Identify widely used software applications.
   c. Discuss various high level languages.
   d. Discuss data organization.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Create and print mailable documents.
   a. Develop keyboarding skills.
   b. Prepare letters using full block style.
   c. Use word processing software to produce documents.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Create and print spreadsheet.
   a. Use spreadsheet software to produce acceptable worksheets.
   b. Generate graphs from worksheets.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1,M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

5. Create and print database files.
   a. Use database software to produce databases.
   b. Edit database records.
   c. Print reports.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
6. Integrate application information.
   a. Merge a database with a word processing letter.
   b. Merge a spreadsheet with a letter.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

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RELATED VOCATIONAL-TECHNICAL COURSES

Course Name: Business Accounting

Course Abbreviation: BOT 1433

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course is designed to develop an understanding of recording, classifying, and summarizing business transactions and events with insight into interpreting and reporting the resulting effects upon the business. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Demonstrate an understanding of basic accounting terminology, concepts, and procedures.
   a. Analyze business transactions in terms of the accounting equation.
   b. Determine the effects of business operations on owner's equity.
   c. Utilize the basic accounting cycle in analyzing the flow of financial data.
   d. Classify, journalize, and post financial information.
   e. Perform end-of-period accounting functions.
   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Prepare each of the basic financial statements.
   a. Prepare a balance sheet.
   b. Prepare an income statement.
   c. Prepare a statement of owner's equity.
   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Use special journals for recording transactions.
   a. Use a combined cash journal and manage a commercial petty cash journal.
   b. Use a sales journal, purchases journal, cash payments journal, and cash receipts journal.
   Related Academic Topics (See Appendix A): C1, C5, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Operating Systems

Course Abbreviation: BOT 2142

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course will provide training in using the computer to work with disk operating systems and a multi-tasking environment. (2 sch: 1 hr. lecture, 2 hr. lab)

Prerequisites: Microcomputer Applications (BOT 1133)

Competencies and Suggested Objectives:

1. Demonstrate an understanding of the required major components of a computer system and how they are configured.
   a. Identify the major components of a computer.
   b. Identify the electronic connections required between the components of a computer.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
2. Describe basic terminology of the selected operating system.
   a. Define operating system terminology.
   b. Use terminology correctly and appropriately in context related to operating systems.

   Related Academic Topics (See Appendix A): C1, C4, C6
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate the ability to use basic commands and perform fundamental operations.
   a. Boot the computer system.
   b. Key or change the date and time.
   c. Key directory or catalog commands.
   d. Copy, compare, rename, delete, and undelete files.
   e. Copy, compare, and name disks.
   f. Create, change, check, and delete subdirectories or folders.
   g. Back up and restore files.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Create and revise text files.
   a. Use text editor to create text files.
   b. Use text editor to revise text files.

   Related Academic Topics (See Appendix A): C1, C4
   Workplace Skills (See Appendix B): WP2, WP4, WP6

5. Perform disk and file management tasks.
   a. Rename, move, copy, compare, delete, undelete, compress, and expand files.
   b. Format and unformat diskettes.
   c. Label, copy, and compare diskettes.
   d. Display a tree-structured directory and search for files.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
6. Create, use, display, and remove tree-structured elements of the disk.
   a. Create subdirectories in appropriate tree structure.
   b. Check the position within, navigate within, and remove subdirectories or folders.
   c. Manipulate files within subdirectories or folders.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4, WP5
7. Use multiple applications simultaneously in a window environment.
   a. Open two or more software applications on one screen.
   b. Manipulate windows by resizing, reshaping, and moving borders.
   c. Organize and use icons.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4
8. Describe and/or set up and use virtual and hard disks.
   a. Discuss dividing a hard disk.
   b. Describe the procedure for formatting or initializing, labeling, and unformatting a hard disk.
   c. Create, label, and delete a virtual disk.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4
9. Use the mouse to perform functions.
   a. Point, click, double click, and drag the mouse pointer.
   b. Open and close files.
   c. Size, minimize, maximize, and scale windows.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4
10. Describe computer viruses.
    a. Explain effects of computer viruses.
    b. Identify various types of computer viruses.
    c. List methods of prevention and elimination of computer viruses.
    d. Scan for and purge viruses from disks.

    Related Academic Topics (See Appendix A): C1, C4, C6
    Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Computerized Accounting

Course Abbreviation: BOT 2413

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course applies basic accounting principles using a computerized accounting system. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: Business Accounting (BOT 1433)

Competencies and Suggested Objectives:

1. Perform the operations of the accounting cycle on the computer using accounting software.
   a. Build and utilize a computerized general ledger system and maintain a chart of accounts.
   b. Build and utilize a computerized accounts receivable system.
   c. Build and utilize a computerized accounts payable system.
   d. Utilize an integrated, computerized accounting system.
   Related Academic Topics (See Appendix A): C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Use accounting software to maintain inventory, depreciation, and payroll records.
   a. Compute depreciation schedules.
   b. Maintain inventory records.
   c. Calculate and prepare payroll records.
   Related Academic Topics (See Appendix A): C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Prepare and analyze financial statements using accounting software.
   a. Prepare balance sheets, income statements, and statements of owner's equity.
   b. Prepare schedules of accounts payable and accounts receivable.
   c. Prepare statements of change in financial position.
   Related Academic Topics (See Appendix A): C1, C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Differentiate between manual and computerized accounting.
   a. Identify the advantages and disadvantages of a computerized accounting system.
   b. Identify the importance of maintaining backup copies of data.
   Related Academic Topics (See Appendix A): C1, C2, C4, M1, M2, M7
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

Course Name: Business Communication

Course Abbreviation: BOT 2813

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course develops communication skills with emphasis on principles of writing business correspondence and reports, and analyzing and summarizing information in a logically written presentation. (3 sch: 3 hr. lecture)

Prerequisites: Mechanics of Communication (BOT 1713) and ability to key straight copy material at a minimum of 40 gwpm; or consent of instructor

Competencies and Suggested Objectives:

1. Organize and compose effective business letters, memorandums, reports, and messages.
   a. Identify direct, indirect, and persuasive approaches to writing business letters.
   b. Develop skills to produce clear, concise, complete, accurate, and courteous messages.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Prepare written communications involved in the job application process.
   a. Complete an application form.
   b. Update a personal data sheet.
   c. Compose letters of application, follow-up, acceptance, and resignation.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Demonstrate sensitivity in communicating with a diverse workforce.
   a. Research and identify factors that impact communication.
   b. Apply appropriate strategies for successful communication.

   Related Academic Topics (See Appendix A): C1, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP4, WP6
4. Develop communication skills for an international audience.
   a. Prepare documents in correct style for international communications.
   b. Research and identify the customs of the people with whom you are communicating.
   c. List resources to utilize in finding answers to questions related to international business communications.
   d. Investigate the use of translation software.

   Related Academic Topics (See Appendix A): C1, C2, C4, C5
   Workplace Skills (See Appendix B): WP2, WP3, WP4, WP6

Course Name: Advanced Microcomputer Applications

Course Abbreviation: BOT 2713

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course develops the ability to use an operating system to integrate activities using applications software which includes word processing, database, spreadsheet, graphics, and telecommunications. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: Microcomputer Applications (BOT 1133)

Competencies and Suggested Objectives:

1. Create integrated business documents transferring data among software applications.
   a. Transfer data between a database application and a spreadsheet application.
   b. Transfer data between a database application and a word processing application.
   c. Transfer data between a spreadsheet application and a word processing application.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4
2. Utilize advanced functions of software applications.
   a. Describe and/or set up appropriate configurations of software.
   b. Use advanced functions of word processing software.
   c. Use advanced functions of database management software.
   d. Use advanced functions of spreadsheet software.

   Related Academic Topics (See Appendix A): C1, C2, C4
   Workplace Skills (See Appendix B): WP2, WP4
3. Identify new technology.
   a. Describe teleconferencing.
   b. Describe the use of virtual reality.
   c. Use a public information retrieval service and conduct a search.
   d. Use CD-ROM technology.

   Related Academic Topics (See Appendix A): C2, C4, C6, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
4. Make informed decisions for evaluating and purchasing computer software and equipment.
   a. Discuss basic criteria for evaluating software.
   b. Identify requirements for computer hardware.

c. Discuss computer ethics.
d. Discuss the advantages and disadvantages of a local area network.

Related Academic Topics (See Appendix A): C1, C4, C6, S8
Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

5. Plan, develop, and deliver a presentation using multimedia.
   a. Organize information and plan the message.
   b. Utilize multimedia software applications to enhance the message.

   Related Academic Topics (See Appendix A): C1, C2, C4, C6, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6
6. Demonstrate the ability to access information using electronic sources to include online database and CD-ROM software.
   a. Access telecommunications software.
   b. Search and download information.

   Related Academic Topics (See Appendix A): C2, C4, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP5, WP6

RELATED ACADEMIC COURSES

July 30, 1996

Course Name: Principles of Accounting I

Course Abbreviation: ACC 1213

Classification: Related Academic

Description: A study of the elementary accounting principles as applied to the various forms of business organizations, and an introduction to specialized fields of accounting.

July 30, 1996

Course Name: Principles of Accounting II

Course Abbreviation: ACC 1223

Classification: Related Academic

Description: A continuation of Principles of Accounting I (ACC 1213).

July 30, 1996

Course Name: English Composition I

Course Abbreviation: ENG 1113

Classification: Related Academic

Description: A study of grammar and composition, with emphasis on the sentence and the paragraph. Readings, frequent themes.

SECTION II:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR COMPUTER INFORMATION SYSTEMS TECHNOLOGY

1. Networked microcomputer lab with server and taped backup - 16 unit system; second server with four workstations (mini-lab) for hands-on network management practice
   a. Multimedia computers with CD ROM, speakers, sound card, and internal modem (20 per class)
   b. Dot matrix continuous feed heavy-duty printer, wide carriage (2 per class)
   c. Laser printer (1 per class)
   d. Scanner, color page (1 per class)
   e. Cabling and connecting equipment for each network
   f. Fax capability
   g. Internet capability
   h. Color printer (ink jet) (1 per lab)
   i. UPS
2. Mid-range computer (1)
   a. Network-ready
   b. Personal computers (20 per class); network ready to the mid-range computer
   c. Line printer (1 per class)
   d. Networked laser printer (1)
3. Microcomputer maintenance lab (10-unit system)
   a. Multimedia computers with modems (10 per lab)
   b. Printers (dot matrix, laser, ink jet) (5 per lab)
   c. Tape backup unit (1)

INSTRUCTIONAL MATERIALS

1. Dedicated telephone line for Internet connectivity (1 per lab)
2. Cordless telephone (1 per lab)
3. LCD display panel (color) with screen (1 per lab)
4. High intensity overhead projector (1 per lab)
5. Access to copier
6. PC maintenance/repair tool kit (2 per lab)
7. Teleconferencing camera

SUGGESTED RESOURCES

1. Network software (1 per lab)
2. LAN manager software (1 per lab)
3. Network compatible word processing software (1 per lab)
4. Network compatible database management software (1 per lab)
5. Network compatible electronic spreadsheet software (1 per lab)

6. Network compatible presentation software (1 per lab)
7. Network compatible multitasking software (1 per lab)
8. Network compatible operating system software (More than one operating system will be required for CPT 1333 Operating Platforms) (1 per lab)
9. Microcomputer programming languages software (1 per lab)
10. Network compatible desktop publishing software (1 per lab)
11. Network compatible scanning software (1 per lab)
12. Additional clip art software (1 per lab)
13. Network compatible E-mail software (1 per lab)
14. Client access software (1 per lab)
15. Client/server programming language software (1 per lab)
16. Mid-range operating system software--more than one operating system will be required for Operating Platforms (CPT 1333) (1 per lab)
17. Mid-range PC support software (1 per lab)
18. Mid-range Query software (1 per lab)
19. Mid-range programming languages software (1 per lab)
20. Mid-range application development tools software (1 per lab)

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILES

STUDENT COMPETENCY PROFILE
FOR COMPUTER PROGRAMMING

Student: _____ _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Computer Concepts (CPT 1124)

_____ 1. Overview history of information systems.
_____ 2. Discuss hardware components.
_____ 3. Explain classes of software.
_____ 4. Describe functions of data communications.
_____ 5. Identify career opportunities.
_____ 6. Discuss stages of program development.
_____ 7. Develop a working knowledge of a mid-range computer's operating environment.
_____ 8. Demonstrate the ability to run jobs.
_____ 9. Create source members.
_____ 10. Demonstrate printer management.
_____ 11. Utilize the mid-range computer to perform file maintenance.
_____ 12. Comprehend the system message function.

Survey of Microcomputer Applications (CPT 1324)

_____ 1. Demonstrate a basic understanding of an operating system.
_____ 2. Demonstrate the use of word processing software.
_____ 3. Demonstrate the use of spreadsheet applications.
_____ 4. Demonstrate the use of database applications.
_____ 5. Transfer data among applications.

Operating Platforms (CPT 1332)

_____ 1. Describe global terminology of platforms.
_____ 2. Use operating platform to perform basic system tasks.
_____ 3. Discuss software in relation to different platforms.
_____ 4. Explain the function of utilities.
_____ 5. Use advanced features of platform.
_____ 6. Differentiate between micro and mid-range operating platforms.
_____ 7. Discuss computer viruses.

System Administration and Control (CPT 1343)

_____ 1. Apply methods of describing database files.
_____ 2. Demonstrate the ability to query a mid-range system's database.
_____ 3. Demonstrate the use of the system's utility to create menus and display screens.
_____ 4. Develop control language programs to access system functions and database files.
_____ 5. Transfer files between mid-range and microcomputer systems.
_____ 6. Demonstrate the ability to backup and recover information.

Network Management (CPT 2153 [BOT 2153])

_____ 1. Identify networking theories and concepts and the different components and technologies that allow network communication.
_____ 2. Plan, install, and configure a network.
_____ 3. Perform network administration.

Systems Analysis and Design (CPT 2354)

_____ 1. Describe the role of systems analysts.
_____ 2. Describe the steps involved in a system project.
_____ 3. Discuss initiation of a system project and preliminary investigation.
_____ 4. Discuss the detail system investigation and analysis.
_____ 5. Discuss system design.
_____ 6. Discuss system development.
_____ 7. Describe system implementation and evaluation.

BASIC Programming Language (CPT 1214)

_____ 1. Demonstrate the use of computational and logical operations.
_____ 2. Illustrate the use of control breaks.
_____ 3. Illustrate techniques available to improve the appearance of printed reports.
_____ 4. Illustrate the use of interactive programs.
_____ 5. Demonstrate the use of controlled loops.
_____ 6. Illustrate the use of arrays/tables.
_____ 7. Apply the use of sort routines.
_____ 8. Demonstrate file processing and file maintenance techniques.
_____ 9. Develop programs that use menus.

RPG Programming Language (CPT 1224)

_____ 1. Discuss the development of the RPG language.
_____ 2. Analyze the steps of the program development cycle.
_____ 3. Use RPG specifications for a simple program.
_____ 4. Apply the RPG syntax to perform arithmetic and assignment operations.
_____ 5. Produce RPG programs using a top-down, structured approach.
_____ 6. Discuss the use of RPG operations for file access and record manipulation.

COBOL Programming Language (CPT 1234)

_____ 1. Describe the COBOL language.
_____ 2. Demonstrate the use of arithmetic operations.
_____ 3. Prepare edited reports.
_____ 4. Demonstrate a knowledge of decision processing.
_____ 5. Produce reports to initiate control break processing.
_____ 6. Practice table processing.

Database Programming (CPT 2244)

_____ 1. Demonstrate the use of computational and logical operators.
_____ 2. Illustrate the process of preparing reports.
_____ 3. Develop programs that use menus.
_____ 4. Demonstrate the use of controlled loops.
_____ 5. Apply file processing and file maintenance techniques.

Control Language Programming (CPT 2254)

_____ 1. Explain the role of control language in relation to other languages.
_____ 2. Describe how CL command names are structured.
_____ 3. Demonstrate the ability to create, compile, and test CL programs.
_____ 4. Discuss the use of program variables.
_____ 5. Identify CL control structures.
_____ 6. Discuss the use of input and output in a CL program.

Advanced RPG Programming Language (CPT 2264)

_____ 1. Apply RPG programming theory and techniques to tables and arrays.
_____ 2. Discuss the use of RPG techniques to develop interactive applications.
_____ 3. Produce business applications of the RPG language using the program development cycle.

Advanced COBOL Programming Language (CPT 2274)

_____ 1. Demonstrate the use of multiple level tables/arrays.
_____ 2. Use a sort routine.
_____ 3. Illustrate file maintenance techniques.
_____ 4. Utilize interactive programming techniques.

C Programming Language (CPT 2284)

_____ 1. Demonstrate proper programming techniques.
_____ 2. Show ability to use fundamental C concepts.
_____ 3. Demonstrate the use of decision-making.
_____ 4. Employ repetitive structures.
_____ 5. Discuss array processing.
_____ 6. Relate a knowledge of preprocessor commands.
_____ 7. Demonstrate the use of functions.
_____ 8. Discuss pointer variables.
_____ 9. Examine C's string handling capabilities.

Work-Based Learning in Computer Information Systems Technology (CPT 291(1-6))

_____ 1. Apply technical skills needed to be a viable member of the work force.
_____ 2. Apply skills developed in other program area courses.
_____ 3. Apply human relationship skills.
_____ 4. Apply and practice positive work habits and responsibilities.

_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.

_____ 6. Assess accomplishment of objectives.

_____ 7. Utilize a set of written guidelines for the work-based learning program.

STUDENT COMPETENCY PROFILE FOR NETWORK SUPPORT

Student: _____

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_____ 6. Differentiate between micro and mid-range operating platforms.
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_____ 3. Demonstrate the use of the system's utility to create menus and display screens.
_____ 4. Develop control language programs to access system functions and database files.
_____ 5. Transfer files between mid-range and microcomputer systems.
_____ 6. Demonstrate the ability to backup and recover information.

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_____ 2. Plan, install, and configure a network.
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_____ 2. Illustrate the use of control breaks.
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_____ 5. Demonstrate the use of controlled loops.
_____ 6. Illustrate the use of arrays/tables.
_____ 7. Apply the use of sort routines.
_____ 8. Demonstrate file processing and file maintenance techniques.
_____ 9. Develop programs that use menus.

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_____ 2. Show ability to use fundamental C concepts.
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_____ 4. Employ repetitive structures.
_____ 5. Discuss array processing.
_____ 6. Relate a knowledge of preprocessor commands.
_____ 7. Demonstrate the use of functions.
_____ 8. Discuss pointer variables.
_____ 9. Examine C's string handling capabilities.

Fundamentals of Data Communications (CPT 1413)

_____ 1. Discuss basic communications.
_____ 2. Analyze hardware, media, and software.
_____ 3. Discuss communications networks.
_____ 4. Discuss the future of communication.
_____ 5. Demonstrate the use of the Internet.

Advanced Network Management (CPT 2423)

_____ 1. Demonstrate various advanced printer techniques.
_____ 2. Use server console commands in order to control system.
_____ 3. Demonstrate how to share CD-ROMS.
_____ 4. Demonstrate the use of login scripts.
_____ 5. Use menu systems to increase the efficiency of users.

Client/Server Systems (CPT 2444)

_____ 1. Discuss the advantage of client/server systems.
_____ 2. Discuss the components of client/server systems.
_____ 3. Demonstrate a knowledge of client/server development.
_____ 4. Develop a client/server applications system.

System Maintenance (CPT 2433)

_____ 1. Discuss basic elements of computer maintenance.
_____ 2. Perform system disassembly/inspection.
_____ 3. Discuss preventive maintenance.
_____ 4. Illustrate ability to troubleshoot.
_____ 5. Upgrade computer components.
_____ 6. Describe mid-range maintenance and troubleshooting.

Work-Based Learning in Computer Information Systems Technology [CPT 291(1-6)]

_____ 1. Apply technical skills needed to be a viable member of the work force.
_____ 2. Apply skills developed in other program area courses.
_____ 3. Apply human relationship skills.
_____ 4. Apply and practice positive work habits and responsibilities.
_____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
_____ 6. Assess accomplishment of objectives.
_____ 7. Utilize a set of written guidelines for the work-based learning program.